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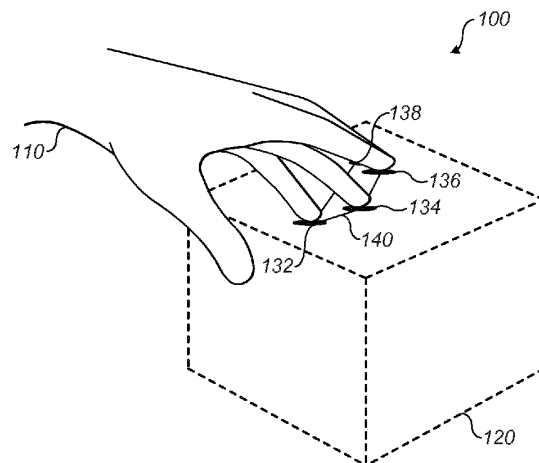


FIG. 1

(57) Abstract: An acoustic field may be produced from a transducer array having known relative positions and orientations. In this acoustic field, one or more control points may be defined. An amplitude may be assigned to the control point. Mid-air haptic effect for a virtual object (120) on a human hand (110) may be generated by moving the control point in a single closed curve comprising a plurality of curve segments. The single closed curve traverses at least one location where the human hand intersects with the virtual object. Additionally, a user may interact with virtual three-dimensional content using the user's hands while a tracking system monitoring the user's hands, a physics engine updates the properties of the virtual three-dimensional content and a haptic feedback system provides haptic information to the user.

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